

CLAIMS

- 1.- A lens position adjustment system for adjusting the position of a lens relative to a projection system, said lens position adjustment system comprising a base plate (104), a lens fixing means (106) adjusted to
5 fixate a lens (102) against said base plate (104), a first drive means (110) and a second drive means (114),
 said first drive means (110) having at least one drive transfer zone on the base plate (104) for converting a motion of said first drive means to a linear translational motion of said base plate (104) and said second drive
10 means (114) having at least one drive transfer zone on the base plate (104) for converting a motion of said second drive means to a linear translational motion of said base plate (104),
 wherein said drive transfer zones all lie in a single plane.

- 15 2.- A lens position adjustment system according to claim 1, wherein said shifting means comprises means for horizontally, vertically or combined horizontally and vertically shifting of the base plate 104 in a plane perpendicular to the optical axis of said projection system.

- 20 3.- A lens position adjustment system according to claim 1, wherein said drive transfer zones have a fixed position with reference to the base plate 104.

- 25 4.- A lens position adjustment system according to claim 1, wherein a drive transfer zone comprises:
 a first part (122), at least one second part (126) connected to the base plate (104) and an eccentric axle (120) in driving contact with the first part 122, whereby a rotational movement of said eccentric axle (120) is transferred into a translational movement between said first part (122)
30 and said second part (126).

- 5.- A lens position adjustment system according to claim 4, comprising a sliding bearing between said first part (122) and said at least one second

part (126) so as to allow translation of said first part (122) and said at least one second part (126) relative to each other.

- 5 6.- A lens position adjustment system according to claim 4, each of said drive means furthermore comprising a motor having:
a motor shaft (116)
and, for said at least one drive transfer zone, a worm gear (118) in driving contact with a gear wheel (124), and
an axle (120) located eccentrically on said gearwheel (124).
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- 15 7.- A lens position adjustment system according to claim 1, whereby said first and second drive means have means for providing movement of the base plate (104) out of the plane perpendicular to the optical axis of the projection system.
- 20 8.- A lens position adjustment system according to claim 7, wherein said means for providing movement out of the plane perpendicular to the optical axis of the projection system comprises means for providing movement parallel movement of the base plate (104) along the optical axis of the projection system, means for horizontal tilting of the optical axis of the lens (102) compared to the optical axis of the projection system, means for vertical tilting of the optical axis of the lens (102) compared to the optical axis of the projection system and means for
25 providing a combination of horizontal and vertical tilting of the optical axis of the lens (102) compared to the optical axis of the projection system.
- 30 9.- A lens position adjustment system according to claim 6, wherein in each of the three drive transfer zones, the drive means are adapted for also creating a movement parallel to the optical axis of the projection system.
- 10.- A lens position adjustment system according to claim 6, whereby for each of the three drive transfer zones, said eccentric axle (120) is attached to

said gearwheel (124) by a spherical bearing and said eccentric axle (120) is provided with means for adjusting the position of the first part (122) along the eccentric axle.

- 5 11.- A lens position adjustment system according to claim 1, wherein said lens fixing means (106) comprises at least three releasable lens clamps (500) so as to clamp the lens (102) against said base plate (104).
- 10 12.- A lens position adjustment system according to claim 11, wherein said lens clamps (500) are kept in a clamping position, allowing to clamp the lens (102) against the base plate (104), by means of resilient bias means (502).
- 15 13.- A lens position adjustment system according to claim 11, whereby said lens clamps (500) are switchable from a clamping position, allowing to clamp the lens (102) against the base plate (104), to an open position, allowing to remove said lens (102) from said base plate (104).
- 20 14.- A lens position adjustment system according to the claim 11, wherein said lens clamps (500) are actuatable by means of levers and said lens fixing means (106) furthermore comprises a system of rods adjusted to block the levers if these are in a clamping position.
- 25 15.- A projection system comprising lens position adjustment system according to claim 1 adapted to provide movement of the lens (102) in five degrees of freedom.
- 30 16.- A projection system according to claim 15 wherein said five degrees of freedom correspond with horizontal shift, vertical shift, horizontal Scheimpflug, vertical Scheimpflug and movement along the optical axis of the projection system.